

**PODOLEPIS MONTICOLA, A NEW SPECIES OF COMPOSITAE  
FROM QUEENSLAND**

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**SUMMARY**

*P. monticola*, *P. longipedata* A. Cunn. ex DC. and *P. neglecta* G. L. Davis each have a chromosome complement of 20. *P. canescens* A. Cunn. ex DC. is recorded from Queensland. These species are distinguished from others in Queensland in a key.

**Podolepis monticola** R. J. F. Henderson; species nova *P. longipedatae* A. Cunn. ex DC. et *P. jaceoidi* (Sims) Voss affinis, ab hac foliis multo latioribus, capitulis minoribus, bracteis intermediis minoribus, ab illa foliis multo latioribus, capitulis majoribus differt. Typus: *Henderson* H127 (Holotypus BRI.077216; Isotypi distribuendi—K, NE, NSW, MEL, TEX).

Herba perennis; caules lignosi prostrati interdum ramosi, 10–15 cm longi, bases foliorum annotinorum emortuorum atque ad apicem rosulam foliorum hornotinorum et caulem floriferum erectum, ramosum vel simplicem, 20–50 cm altum, lanatum, foliatum ferentes. Folia rosulae usque ad 21 cm longa, amplexicaulia, laminis ovatis usque obovatis, 3.5–6.5 cm latis, obtusis, acutis vel acuminatis, in petiolos alatos longos attenuatis. Folia inferna caulis florentis foliis rosulae similia, usque ad 18 cm longa usque ad 5 cm lata, folia superiora multo breviora angustioraque, linearia vel anguste ovata, amplexicaulia. Folia supra sparsim tuberculata, tuberculato-hirta vel superiora lanata, subtus lanata. Capitula 1–10, unumquidque in pedunculo bracteato terminali vel axillari usque ad 20 cm longo situm. Involucra usque ad 2 cm longa et 2.5 cm lata; bractee involucri sessiles atque unguiculatae, laminis rubiginosis, planis vel  $\pm$  rugulosis, acutis, obtusis emarginatis vel truncato-emarginatis, marginibus minute serratis; bractee intermediae 9–11 mm longae, earum ungues 4–5 mm longi extus papillis brevibus crassis multicellulosis numerosis praediti, earum laminae ovatae, ca 3 mm latae, obtusae vel  $\pm$  emarginatae unaquaque nervo mediano percurrente. Flosculi flavi; corollae tubus extus papillis brevibus multicellulosis dispersis praeditus. Flosculi radii ca. 30; corollae 20–30 mm longae, unusquisque limbo patenti usque ad 15 mm longo et 1.5–3.0 mm lato, profunde 2–4 lobato vel interdum lobo quinto

digitiformi omnino libero praedito; setae pappi 19–24, ca. 7 mm longae, subtiliter antrorsim barbellatae, basi breviter connatae et interdum supra medium bifidae. Flosculi disci ca. 170; corollae 10–15 mm longae, lobis acutis 1.2–1.8 mm longis, marginibus incrassatis; setae pappi 23–28 setis flosculorum radii similes; antherae 2.2–2.4 mm longae apice appendiculatae, basi longe caudatae; pollinis grana spinosa, 37–40  $\mu$  diam.; lobi stylorum ca. 2–2.5 mm longi, in flosculis radii filiformi vel apice incrassati, in flosculis disci truncati. Achenia recta vel parum curva, brunnea, laevia vel sparsim minute papillosa, teretia vel in siccitate angulata, apice contracta, 2.5–3.2 mm longa et 0.8 mm lata. Chromosomatum numerus:  $2n = 20$ .

Perennial herb; stems woody, prostrate, occasionally branched, 10–15 cm long, bearing dead leaf-bases of the previous season, and at the apex a rosette of leaves and an erect, simple or branched, lanate, leafy flowering stem 20–50 cm high. Rosette leaves up to 21 cm long, stem-clasping, with blades ovate to obovate, 3.5–6.5 cm broad, obtuse, acute or acuminate, gradually narrowed into winged petioles. Lower leaves of the flowering stem similar to those of the rosette, up to 18 cm long and 5 cm broad intergrading into shorter and narrower linear or narrowly ovate upper leaves. Upper surface of leaves from sparsely tuberculate, tuberculate-hirtellous to lanate in upper cauline leaves, the lower surface lanate. Capitula 1 to 10, each on a bracteate, terminal or axillary peduncle to 20 cm long. Involucres to 2 cm long and 2.5 cm broad; involucre bracts sessile and clawed, with red-brown, smooth or  $\pm$  rugulose, acute, obtuse, emarginate or truncate-emarginate laminae, with minutely serrulate margins; intermediate bracts 9–11 mm long, their claws 4–5 mm long with numerous short, thick, multicellular papillae on the outer surface, laminae ovate, ca. 3 mm broad, obtuse, or  $\pm$  emarginate, with a percurrent midnerve. Florets yellow; corolla tubes with scattered multicellular papillae on the outside. Ray florets about 30; corollas 20–30 mm long, with spreading limbs to 15 mm long and 1.5–3.0 mm broad, deeply 2–4-lobed rarely with a fifth finger-like lobe independent from the base; pappus bristles 19–24, about 7 mm long, finely antrorsely barbellate, shortly connate at the base, occasionally bifid in the upper half. Disk florets about 170; corollas 10–15 mm long, the lobes acute, 1.2–1.8 mm long with thickened margins; pappus bristles 23–28, similar to those of the ray florets; anthers 2.2–2.4 mm long, appendaged at the apex, long-tailed at the base. Pollen grains spinose, 37–40  $\mu$  in diameter. Style-lobes ca. 2–2.5 mm long, in ray florets filiform or sometimes thickened at the ends, in disk florets truncate. Achenes straight or slightly curved, brown, smooth or sparsely minutely papillose, round in cross section or angular when dry, contracted towards the apex, 2.5–3.2 mm long, 0.8 mm broad. Chromosome number:  $2n = 20$ .

QUEENSLAND.—Moreton District: 28° 13' S., 153° 14' E., Lamington National Park—Araucaria Lookout near "Binna Burra" Lodge, in rock crevices on an exposed south-easterly slope, 2 Nov. 1965, *Henderson* H127 (restricted distribution). [28° 13' S., 153° 14' E.] Araucaria Lookout, Lamington National Park, rocky hillside, Feb. 1965, *Lavarack* (yellow flowers). 28° 15' S., 153° 11' E., Lamington National Park, McPherson Range—Mt. Merino, near summit, rock ledge between *Nothofagus* forest and perpendicular cliff, 1100 m, 16 Dec. 1967, *Blake* 22868 (dense bunch of leaves at base, whitish beneath; yellow flowers).

The type collection is without mature fruits. These were described from *Blake* 22868 which is also the voucher specimen for chromosome counts.

In a revision of *Podolepis*, Davis (1956) evaluated the taxonomic characters of the genus, and emphasised the importance of shape and structure of the involucre bracts.

*P. monticola* somewhat resembles *P. longipedata* in characters of the involucre bracts and florets. The intermediate involucre bracts are of the same colour and texture and have similar glandular papillae on the outer surface of the claws, but in general shape they resemble those of *P. jaceoides*, except for their smaller size.

*P. longipedata*, a comparatively widespread species, has been collected chiefly on sandy soils. It occurs at altitudes close to sea level in the vicinity of the Lamington National Park. Here, *P. monticola* has so far been collected only at higher altitudes in a comparatively restricted area. Plants grow with their roots in soil and organic matter caught in crevices in rocky slopes.

*P. monticola* may bear a relationship to *P. longipedata* similar to that which *P. robusta* does to *P. jaceoides* in the south-eastern areas of Australia. Both *P. monticola* and *P. robusta* are from mountainous regions and have larger leaves than any other species in the genus. Apart from this similarity, the two species differ markedly in the shape and indumentum of the leaves, the nature of the involucre bracts and relative proportions of floral parts. In *P. robusta*, the basal leaves are glabrous or rarely lanate as on *Gray* 4474 (BRI.052571) while cauline leaves are glabrous or hairy, the hairiness varying in density but always denser on the upper surface (Davis, p. 255). In *P. monticola* the undersurface of all leaves is more or less woolly, the covering on the upper surface varying but at no stage denser than that of the undersurface. The covering of the upper surface grades from glabrescent with scattered, tuberculate remnants of hairs on rosette leaves and lower leaves of the flowering stem to lanate with hairs without tuberculate bases on the uppermost leaves of the flowering stem.

The leaves of *P. monticola* bear a superficial resemblance to those of *Plantago major* L. in size, shape and venation.

### CYTOLOGICAL STUDIES

Rapidly elongating root tips of germinated seed of *Blake* 22868, fixed in ethanol/acetic acid after three hours in saturated aqueous para-dichlorobenzene (PDB) were stained with carmine according to Snow (1963).

Counts of somatic chromosomes in several cells in six different seedlings show *P. monticola* has a diploid complement of 20 ( $n = 10$ ) (fig. 1A).

Turner (1967) reported the chromosome numbers of twelve species mentioned in Davis's paper and discussed possible lines of evolution within the genus. Five of these species occur in Queensland, viz. *P. arachnoidea* ( $2n = 18$ ), *P. canescens* ( $2n = 20$ ), *P. capillaris* ( $2n = 6$ ), *P. jaceoides* ( $2n = c. 60$ ) and *P. neglecta* ( $2n = 20$ ). A voucher for the last mentioned species in the Queensland Herbarium (Turner 5623—BRI.069067) is a specimen of *P. longipedata*.

Chromosome counts of populations of *P. longipedata* from sand dunes about 2 miles south of Sunshine Beach (ca.  $26^{\circ} 26' S.$ ,  $153^{\circ} 06' E.$ ; Baxter & Lebler 1138, 1139, 1140) showed that this species has a somatic number of 20 (fig. 1B).

Counts were made at the pachytene and diplotene stage of meiosis in pollen mother cells, young capitula being treated in a similar manner to the root tips above except for the PDB treatment. Considering the diversity of somatic numbers so far counted in the genus, chromosome counts support the supposition of affinity between these two species.

Root tips from a seedling raised from a collection of *P. neglecta* (Harrold—BRI.079116) from rocky seacoast in the vicinity of Noosa Heads (ca.  $26^{\circ} 24' S.$ ,  $153^{\circ} 07' E.$ ) were treated in a similar manner to those of *P. monticola*.

Counts in two cells showed a somatic chromosome number of 20 (fig. 1C).

The similarity of karyotype of *P. monticola* and *P. neglecta*, the somatic chromosome complement of these and *P. longipedata* and the definite similarity in several morphological characters especially the involucre bracts and florets suggest close affinities between these three species.

### KEY TO SPECIES

The Queensland species of *Podolepis* can be distinguished with the following key:

Peripheral florets of the capitula with long conspicuous ligules much exceeding the disk florets:

Intermediate involucre bracts sessile, with a hard thick central portion and scarious margins, rather stiff, acute; perennial with rosette leaves not persistent *P. neglecta*

Intermediate involucre bracts with distinct claws at least 3 mm long:

Laminae of intermediate involucre bracts shorter than their claws, acute or somewhat obtuse; perennial with rosette leaves persistent *P. longipedata*

Laminae of intermediate involucre bracts as long as or longer than their claws:

Annual; laminae of intermediate involucre bracts slightly transversely rugose, acute; rosette leaves not always persistent *P. canescens*

Perennial; laminae of intermediate involucre bracts smooth or almost so; rosette leaves persistent:

Rosette leaves linear to oblanceolate, acute, up to 2 cm broad; laminae of intermediate involucre bracts acute *P. jaceoides*

Rosette leaves ovate to obovate, obtuse or somewhat acute, 3.5–6.5 cm broad; laminae of intermediate involucre bracts obtuse or emarginate *P. monticola*

Peripheral florets of the capitula including ligulae scarcely exceeding those of the disk; involucre bracts sessile or almost so:

Perennial; laminae of intermediate involucre bracts acute, transversely rugose and with minutely torn ciliate margins *P. arachnoidea*

Annual; laminae of intermediate involucre bracts obtuse, with margins smooth and flat, indented about half way along each side *P. capillaris*

### DISTRIBUTION OF SPECIES IN QUEENSLAND

*P. arachnoidea* (Hook.) Druce: widespread throughout the State.

*P. canescens* A. Cunn. ex DC.

WARREGO DISTRICT: 28° S., 146° E., on Gilruth Plains Station, 25 miles E. of Cunnamulla on hard red soil, 17 Sept. 1938, *Everist* 1647 (slender erect herb, fairly common). GREGORY SOUTH DISTRICT: 26° S., 143° 32' E., 10 miles NE. of Thylungra Station, in red sand at foot of sandhill, 11 Oct. 1955, *Everist* 5701 (an erect slender annual). [25° 25' S., 143° 15' E.] 1½ miles W. of Oakham Station, Windorah, in red sandy soil at roadside, 28 Aug. 1959, *Stranger* (plants common).

These records fill a discontinuity in the otherwise even distribution of this species in Australia (cf. Davis, p. 260). F. M. Bailey's record (Qd Fl. p. 855) was based on a specimen of *P. neglecta*.

*P. capillaris* (Steetz) Diels: Davis records two far south-western localities for this species but I have not seen any specimens from Queensland.

*P. jaceoides* (Sims) Voss: near coastal and inland localities south of the Tropic.

*P. longipedata* A. Cunn. ex DC.: coastal and inland localities south of the Tropic.

*P. neglecta* G. L. Davis: coastal and near coastal localities south of the Tropic.

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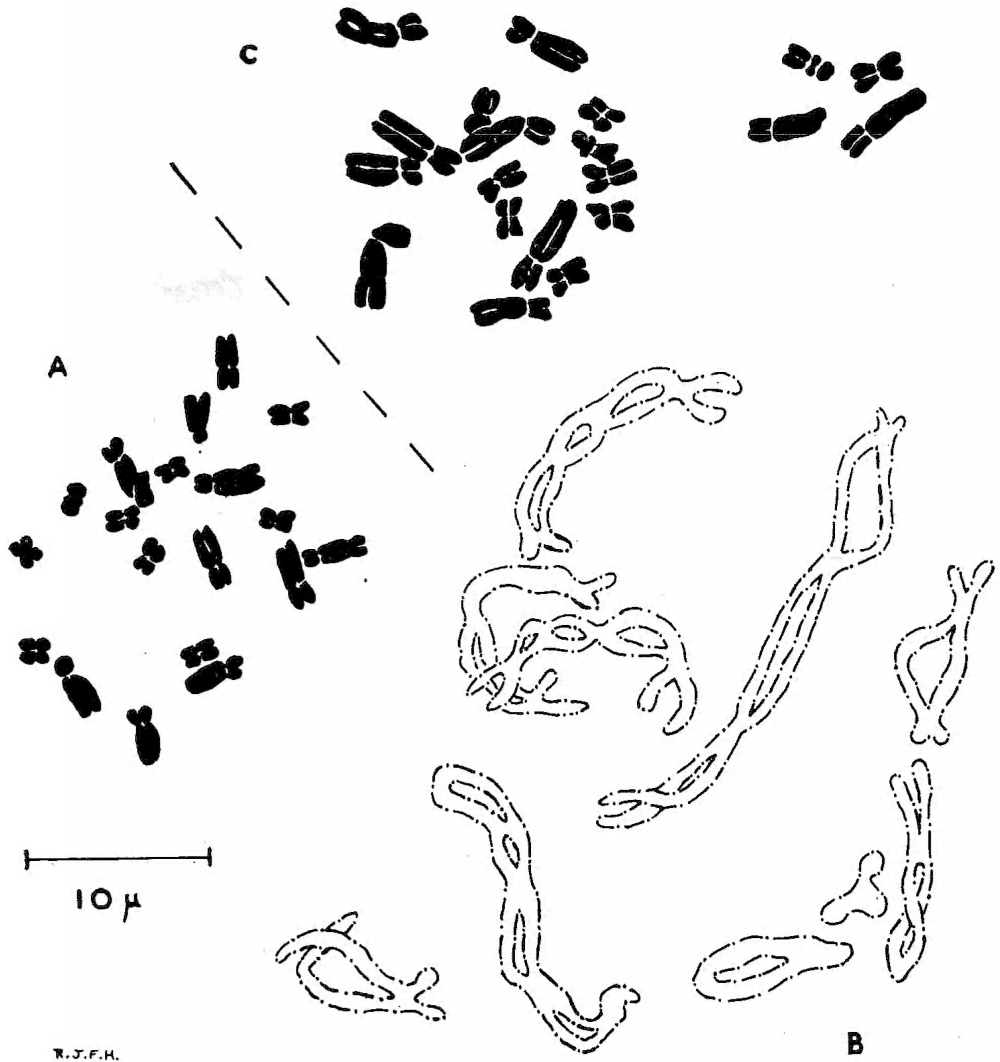


FIG. 1. Chromosomes in *Podolepis*—A: *P. monticola*,  $2n = 20$  (late prophase in mitosis); B: *P. longipedata*,  $2n = 20$  (diplotene in meiosis); C: *P. neglecta*,  $2n = 20$  (late prophase in mitosis).

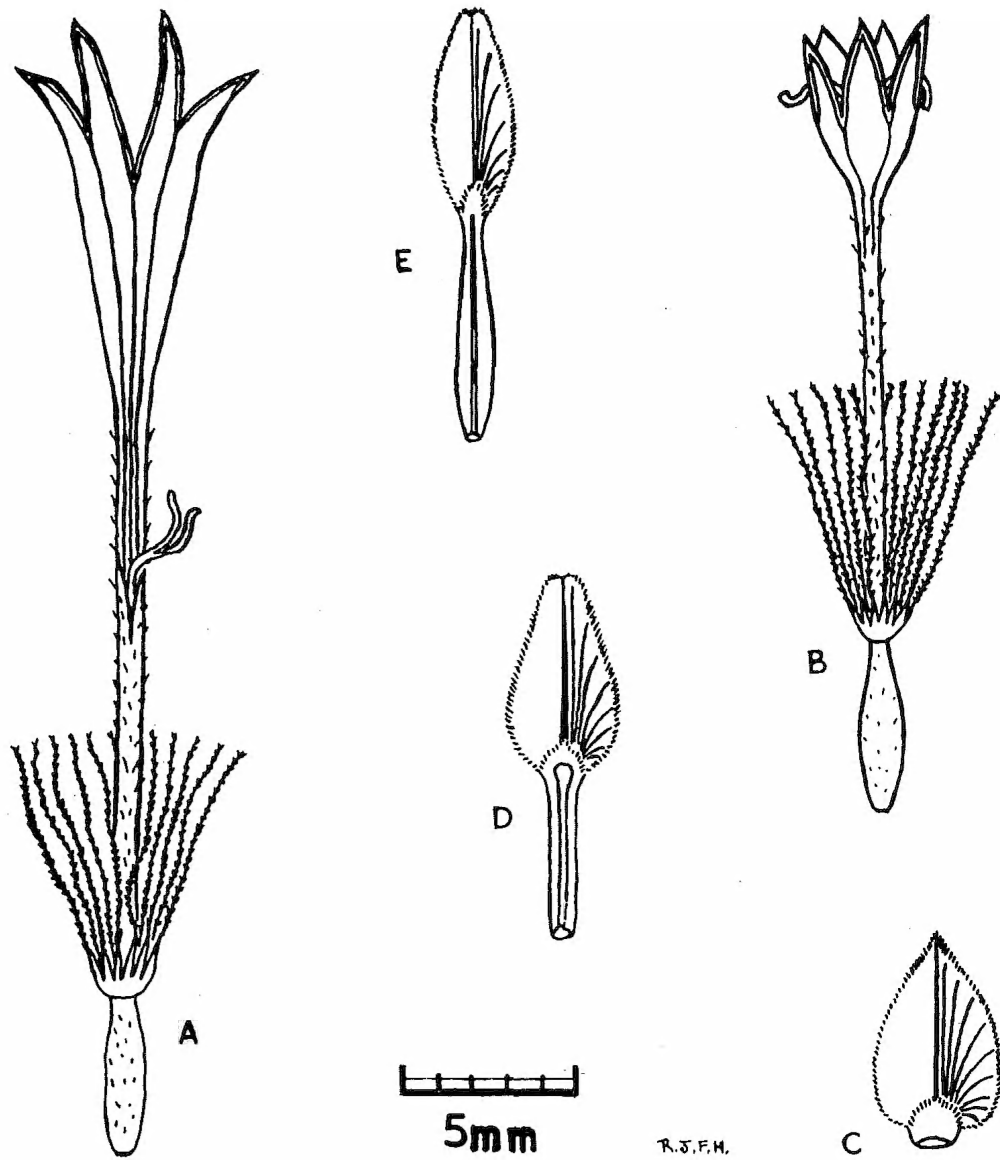


FIG. 2. *Podolepis monticola*—A, ray-floret; B, disk-floret; C-E, outer, intermediate, inner involucre bracts viewed from the inside.





QUEENSLAND HERBARIUM, BRISBANE  
FLORA OF QUEENSLAND, MISTRETT DISTRICT

*Podolepis monticola* R.J. Henderson  
28° 13' S, 153° 14' E;  
Lamington National Park - Araucaria  
Lookout near Binna Burra; in rock  
crevices on an exposed south-  
easterly slope

R.J. Henderson H127 2 Nov. 1965

Limited distribution

HOLOTYPE OF  
*Podolepis monticola*

R.J. Henderson Sept. 1968



FIG. 3. *Podolepis monticola* (Henderson H127, holotype).